

Transboundary Gas Group Meeting Notes

October 19-20, 2006

1. Greetings and Introductions.

Mark Schneider welcomed everyone to the October 19, 2006 meeting of the Transboundary Gas Group, held in Castlegar, British Columbia. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Kathy Ceballos at 503-230-5420.

2. Boundary Dam Proposed TDG Study Plan.

Kim Pate of Seattle City Light described the ongoing Boundary Dam TDG study plan. The study identified six gas abatement options, Pate said:

- Option 1: Throttle sluice gates
- Option 2: Roughen sluice gate discharge
- Option 3: New right abatement tunnel with submerged discharge
- Option 4: New left abatement tunnel intercepts diversion tunnel
- Option 5: Penstock draft tube bypass
- Option 6: New short left abatement tunnel next to unit 51.

Pate said that any comments the TGG membership might have on these options, or the study plan in general, would be extremely helpful. Schnedier said the group will discuss what response would be most appropriate later in today's meeting.

2. CRIEMP Status Report.

Llewellyn Matthews said CRIEMP hasn't done any recent gas modeling. We've done some modeling for our environmental assessments and post-project assessments, he said, but those results have been presented previously to the TGG. CRIEMP has been essentially dormant for the past two years, but is becoming more active, Matthews said; one of our efforts is to integrate the gas models for the various projects into a single model, he said. We are also beginning to revitalize some of our monitoring efforts, he added; there will likely be more to report at the next TGG meeting.

3. Round Table Discussion of TGG Membership.

Schneider said one of the things he wanted to discuss today is how the TGG can respond to the FERC study plan for Boundary. There is also the Pend Oreille TMDL, he said – what's the status of that? Public comment will begin in a week, Paul Pickett replied. So we have both of those documents to comment on, Schneider said, noting that, if the study plan and the TMDL are sent to him, he will be responsible for distributing them to the TGG membership. I don't think there will be any big surprises in the TMDL, Pickett added – it isn't anything in there that you haven't seen before.

And this TMDL is similar to other recent TMDLs, such as the mid-Columbia and Lower Snake TMDLs? Schneider asked. In this case, the two dams in Washington are both FERC licensed, Pickett replied – we don't have the BiOp issues to deal with. It will be modeled on those, but it will be a little different – there are no fish passage standards, for example.

Schneider suggested that the other TGG members provide any comments they may have directly to him; he will then integrate these comments and send them out under the TGG aegis. Chris Maynard suggested that it may be appropriate for the Canadian members to provide comments on the Pend Oreille TMDL. Ultimately, it was agreed that, if individual agencies represented at the TGG provide comments, that they will send a copy of their comments to Schneider for distribution to the full membership.

Moving on, Maynard said the B.C./Washington Environmental Cooperation Council is meeting on November 29, and have requested an update on TGG activities. He said he will be providing that update.

Are any new spring/summer spill studies planned for 2007? Schneider asked. Chief Joseph has one deflector on, said one participant; it will have problems spilling in 2007, because it can't spill out of two of its gates. By April, when spill season begins, three other deflectors will be in place – one full deflector and two half-deflectors. The project is scheduled to be finished by September 2008, he said. So what will the plan be in 2007? Schneider asked. Spill swapping, which we've done in the past, won't work next year, while construction is ongoing, Jim Adams replied.

Another participant said there was an extensive spill/TGG test at Wells Dam in 2006, designed to see how much spill is possible while staying within the 120% TDG standard. It looks as though there are several options that will get us close – 121-122%, he said. Right now, it looks as the crown spill – focusing spill out of three bays – is the best option; in all likelihood, we will test that option more extensively in 2007. The plan is to follow up on the most promising results we saw from the 2006 test, and test those options more extensively, he said, adding that he will provide a copy of the final report on the 2006 test to Schneider as soon as it is available.

The over/under prototype at Rocky Reach was damaged during last year's test,

but if budget allows, we plan to re-install that system in at least one bay in 2007, said another participant. We installed a new FMS probe at the end of the fishway in 2006, she added; we are still evaluating the results we got from that probe. Once the results are in, we'll have a better idea of whether that is an appropriate site, she said; we will continue to monitor at the old site for at least a couple of more years, however. At Rock Island, we may see a change in spring spill in 2007; we may be reducing spill at that project during the spring, but will continue to spill 20% during the summer.

Cabinet Gorge is in the very early conceptual design stage, said another participant. Our original concept hasn't performed as well as we hoped during numerical modeling; once we iron out some of those problems, we will return to physical modeling, probably in the spring of 2007.

Matthews said that, by May 2007, the Brilliant expansion should come on-line, although the schedule may slip a bit. If we meet up here next fall, he said, there may be an opportunity for a site visit. Adams said the Corps is in the process of ordering its third removable spillway weir (RSW) for the Lower Snake projects.

4. Review of Lower Columbia and Lower Snake River Freshet and Spill Program, 2006.

Adams led this presentation, touching on the following major topics:

- Observed water supply and runoff – 24.4 MAF, or 113% of normal during 2006, at Lower Granite Dam in the Lower Snake and 97.5 MAF, or 105% of normal, at The Dalles Dam in the Lower Columbia.
- Observed water supply volumes at Lower Granite and The Dalles, 1995-2006
- Outflow discharge at Lower Granite, March 1-September 30, 2006 (graph)
- Outflow discharge at The Dalles, March 1-September 30, 2006 (graph)
- Oregon and Washington TDG criteria
- TDG management protocols
- 2006 Snake River fish passage spill – Lower Granite, Little Goose, Lower Monumental, Ice Harbor dams
- Spring spill, Lower Granite Dam 2006 (graph) – the 120% standard was exceeded for much of May due to involuntary spill
- Summer spill, Lower Granite, 2006 (graph)
- Spring spill, Little Goose Dam, 2006 (graph)
- Summer spill, Little Goose, 2006 (graph)
- Spring spill, Lower Monumental Dam, 2006 (graph)
- Summer spill, Lower Monumental 2006 (graph)
- Spring spill, Ice Harbor Dam, 2006 (graph)
- Summer spill, Ice Harbor Dam, 2006 (graph)
- Snake River TDG statistics, 2006 – Lower Granite, Little Goose, Lower Monumental, Ice Harbor (table): up to 134.5% in the Lower Granite tailwater during the spring period

- Columbia River fish passage spill operations, 2006 – McNary, John Day, The Dalles and Bonneville Dams (table)
- Spring spill, McNary Dam, 2006 (graph)
- Summer spill, McNary, 2006 (graph)
- Spring spill, John Day Dam, 2006 (graph)
- Summer spill, John Day, 2006 (graph)
- Spring spill, The Dalles Dam, 2006 (graph)
- Summer spill, The Dalles, 2006 (graph)
- Spring spill, Bonneville Dam, 2006 (graph)
- Summer spill, Bonneville, 2006 (graph)
- Columbia River TDG statistics, 2006 – McNary, John Day, the Dalles, Bonneville dams (table) – saw levels up to 134.5% in the John Day tailwater, and numerous exceedences of the standard, particularly at Bonneville
- Historic TDG exceedences, 1999-2006, all federal projects (table) – 581 exceedences in 2006, the highest total on this record.

In response to a question, Adams said late-summer flows in the Lower Snake River were not abnormally low in 2006. Were some of the exceedences due to your efforts to implement Judge Redden's decision? Maynard asked. I don't think so, Adams replied – the flow volumes we were dealing greatly exceeded our available generating capacity.

5. Physical Monitoring of TDG Below Libby Dam in 2006.

Kent Easthouse led this presentation, touching on the following major topics:

- Introduction – spill occurred between June 8 and June 27, 2006; spillway discharge was between 1.5 and 31 Kcfs – TDG monitoring vs. TDG exchange study; limited monitoring scope
- Project site – Libby Dam overview
- Location of Libby Dam and Lake Kookanoosa (map)
- Libby Dam June 2006 spill – study design and operating conditions – rel-time monitoring, automated loggers, parameters studied (TDG, temperature, depth)
- Sampling period and locations
- Libby Dam spill, 2006 – spillway discharge and total flow (hydrograph)
- Water sampling instruments used
- Libby Dam spill, 2006 pre- and post-deployment calibration (table)
- Kootenai River TDG summary – total river flow, spill, TDG, June 1-30, 2006 – 131%-133% TDG at the bridge monitoring sites just below the dam at 31 Kcfs spill, falling to 120% at the Haul monitoring station 8 miles downstream.
- Lateral and longitudinal TDG gradients were apparent in the Kootenai River at all spillway flows, with maximum TDG saturations along

the left channel bank. Spillway releases resulted in elevated TDG pressures in the Kootenai River. Any spill above 2 Kcfs results in exceedence of the 110% standard below Libby.

- Spill vs. TDG at Libby Dam, June 2006 (graph)
- Observed and calculated stilling basin TDG saturation vs. total spillway discharge (graph)
- Relationship between observed and calculated TDG saturation vs. total spillway discharge (graph)
- Conclusions: FMS at Libby Dam was representative of actual river conditions, strong lateral gradient in TDG below the dam; significantly reduced TDG levels at the Haul monitoring site 8 miles downstream

In response to a question, Easthouse described the spill, total river flow and TDG conditions encountered during the 2002 test at Libby. In response to another question, Easthouse said Kootenai Falls below Libby tend to re-set in-river gas levels to about 116%, no matter what the gas levels coming downstream. Any explanation for the strong diurnal pattern in the data from the Haul station? another participant asked. The river is heating up and cooling down – that's the only explanation I can give you, Easthouse replied – the probe was significantly closer to the surface at the Haul station than at the Thompson Bridge.

6. Gas Bubble Trauma Monitoring Below Libby Dam in 2006.

Brian Marotz noted that spill occurs very seldom at Libby Dam. During his presentation, he touched on the following major topics:

- Libby Dam discharge, 2006 – January-August (graph)
- Kootenai River gas supersaturation, June 1-July 13 (graph)
- Fish sampling reaches, 2006 (map) – Thompson Brige to Blackwell Flats
- Average hourly spill vs. average TDG (graph)
- Photos of fish sampled, 2006 – observed signs of gas bubble trauma
- Many signs of GBT were observed during the test
- Incidence of gas bubble trauma – percent of bull trout with symptoms vs. days of spill – by day 8, half of the trout sampled showed signs of GBT; by day 11, all fish sampled had signs of GBT.
- Depth compensation: repeated exposures are additive.

Did all species show similar patterns of GBT? one participant asked. Mountain whitefish have previously shown little resistance to GBT, Marotz replied, but this year, they had a lower incidence of symptoms than the bull trout did. Marotz also provided data on the incidence of GBT seen in rainbow and westslope cutthroat trout.

7. Clark Fork River Water Quality Issues.

Bob Steed led this presentation, touching on the following major topics:

- What is a TMDL? A total maximum daily load or “pollutant budget” for a given body of water.
- Idaho’s TMDL strategy – 58 for the entire state, with 5,200 assessment units statewide
- Clark Fork’s location – northern Idaho panhandle
- Clark Fork TMDL completion due by the end of 2007
- Data collection challenges – particularly acute on larger streams
- Few streams in Idaho are fully supporting their beneficial uses
- TMDLs and future TMDLs – draft Clark Fork TMDL will go out for public comment within a week. Covers TDG, metals and temperature.
- Idaho Clark Fork tributaries – temperature analysis uses a potential natural vegetation approach, solar load, increases in shade
- Idaho Clark Fork tributaries – sediment analysis (sediment reductions by watershed) based on GIS model
- Mainstem metals TMDLs – cadmium, copper, zinc; flow-based loads, all loads allocated upstream to Montana. Cadmium is the main concern for fish. The source of the metals is primarily Montana’s mining district.
- Mainstem TDG – target is 110%, Cabinet Gorge HED has been allocated “no net increase;” reasonable assurance relies on future upstream TMDL (Montana).

8. Next TGG Meeting Date and Location.

The spring 2007 meeting of the Transboundary Gas Group was set for April 19 or 26 at Boundary or in Libby, Montana. Meeting summary prepared by Jeff Kuechle, Bonneville Power Administration contractor.